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ADDRESS

FOR THE

WESTMORELAND COUNTY

Agricultural Society,

BY

EDGAR COWAN, Esq.

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GREENSBURG: *Pa*

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1856.

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WESTMORELAND COUNTY

Society

EDGAR, COLEMAN, & CO.

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GREENSBORO

REPRODUCED FROM THE ORIGINAL OF THE GREENSBORO MEMORIAL

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GREENSBURG, April 10, 1856.

THE Committee of Arrangements of the Westmoreland County Agricultural Society were empowered, by a Resolution of the Society, to procure an orator to deliver an Address at the last Annual Exhibition and Fair. They were very fortunate in securing the services of EDGAR COWAN, Esq., of this Borough. The day set apart for this purpose proving very disagreeable, and Mr. C. being at that time somewhat indisposed, the Managers concluded to request Mr. COWAN to write out his remarks for publication. This he has very kindly consented to do; and the following pages will bear ample testimony to the happy manner in which he has acquitted himself.

F. J. COPE, *President.*

THE ADDRESS OF THE
COMMISSIONERS OF THE
LAND OFFICE

Presented to the House of Commons
in the Year 1841

By
JAMES G. B. [Name illegible]

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1841

ADDRESS OF MR. COWAN.

THERE is very little doubt but that Agriculture was the first industrial pursuit of civilized men, or, rather, of men who tended to civilization, and were capable of progress.

Civilization itself consists in that change which is constantly wrought upon all those things we denominate the *natural and the wild*. Civilized man himself is a forcible example of this metamorphosis. In a state of nature, he would be naked and defenceless, with no advantages over the beasts of the field, but the rather their inferior in all respects; but by force of taking himself into his own hand, he has become far the most powerful of all, and must eventually attain to an absolute and universal dominion over all.

It is curious to observe how thoroughly he has got rid of his natural condition; scarcely a vestige of it remains either in his appearance or habits. His natural state was one of nakedness and uniformity of figure. To alter and remedy this, he has invented *clothes and fashion*—clothes to cover and hide almost totally his body, and fashion to modify them in every possible manner, so as to conceal his personal defects or set off his personal beauty. If he is too slender, he pads himself; and if too lusty, he girds himself more strictly. He has levied contributions from all the kingdoms of nature—jewelry, silks and furs—to adorn him; he has plundered the civet-cat and musk-ox to scent himself with their perfume; and, if not pleased with his complexion, he rouges it up to the desired tint of health and beauty. He also cuts his hair, shaves his beard, trims his nails, and constructs for himself artificial eyes, teeth, hair, arms, legs, &c., and can supply anything of himself which is worn out or lost, except the head and trunk. He also refuses to eat as in a state of nature, cooking his food, and tempering it to his palate in a thousand different ways; and he has sought and found beverages which differ entirely from any thing produced spontaneously in nature.

Such, then, is civilized man—in his shape, gait, manner, food and adornments—made by himself, rather than a product of nature—the result, rather, of a power delegated to him by the Creator, than the work of the Creator himself; and he takes his rank in the scale of progress and advancement, just in proportion as he has subjected himself to his own dominion and made himself the creature of his own art.

All of the human family have more or less of this art, compared with the lower animals. It is the boundary between them, and one which the latter are unable to cross; for even the wisest of them practice no art beyond that necessary to bring forth and rear their young, and have not skill enough to make a fire. Still there are even yet whole races of men upon the confines of this dividing line, whose progress has been so small as to leave them without the character of having made any. It seems to be somewhat difficult, too, to fix precisely as to what point a nation or people may be said to have fairly embarked upon that career of industrial improvement which will ultimately entitle them to the credit and comforts of civilization.

But if it were proper to speculate upon this topic, it is more than likely, on looking back along the necessary course of things, the majority of observers would settle upon that period in their history when men first began to engage themselves in *Agriculture*, as the one in which they made the first decisive step towards civilization. Until that time, they were of necessity savages, without engaging themselves in continued labor, and without fixed homes or definite notions of real property.

As soon, however, as they began really to *work* and expend their labor upon the soil, the soil itself became theirs, for the reason that they could not have and enjoy their labor, which was clearly *theirs*, without appropriating to themselves the Earth upon which they had bestowed it, and which, before that time, belonged to nobody. If a man clear and enclose a field out of the wilderness, his right to enjoy it exclusively is necessary to enable him to enjoy his own; and this right all men will naturally respect. If he build a house in a particular spot, that spot itself becomes, as it were, a part of the house; and he owns it, too, because essential and necessary to his enjoyment of the house he has builded. Now, I suppose the man who cleared and enclosed the first field, first entertained the idea of property in that field; and, further, that finding this same field thus prepared would serve him for an indefinite length of time, he built him a house near it, which became his fixed abode and permanent *home*. And these were two great ideas to achieve, and wondrous things come from men owning the soil, and having fixed and established *homes*.

At this juncture, man resolves to treat the earth just as we have seen that he has treated himself—re-model it from one end to the other—dominate and subjugate every thing upon it to his will and mastery. He then becomes, in truth and in fact, a *Lord of Creation*; and a two-fold work commences entirely unknown before this time upon the earth, namely, the work of *systematic eradication and destruction* of all that is *spontaneous and wild*, and the substitution, in its stead, of that which is *cultivated and reclaimed*.

Let us observe the process by which, newly inspired, he undertakes to achieve the conquest of the earth. Going into the forest, he wages a war of extermination with every animal inhabiting it who will not submit to the terms he proposes to them, which are "unconditional submission and servitude, along with fertility in a state of slavery." "Come," says he, "work for me and be prolific, and I am your master first, and then your friend; but refuse to accept, and eternal war is between us, until you are exterminated." To this summons, the horse, the ox, the ass, the sheep, the hog, and a few others, answer favorably—come in—give up their liberty, and have a master's care and providence in return. Others, however, as the lion, the tiger, the hyena, the wolf and the zebra refused, and they have shared the fate threatened them; and there are now whole districts of a hundred miles square in which no one of them is to be found, and the time must at last come when the the whole will cease to be—not one left on the face of the earth.

Nor do the birds fare any better at his hands. All of them, loving their liberty, and unwilling to exchange the wild wood of the forest and mountain for the comforts of the barn-yard, are doomed to consider themselves constantly in the presence of an enemy.

"Man's dominion
Has broken Nature's social union."

And the great eagle, the vulture, the hawk and the jay are henceforth fair game; while the cock, the turkey, and the whole lumbering tribe of scratchers, are cultivated with great care and attention, of which the late Shanghai and Chittagong mania was an instance.

Insects, too, are almost all under a perpetual ban. The nest of the hornet, wasp and yellow jacket are beaten and stoned even by his children with a kind of instinctive desire for extermination. But the bee and the silk-worm, on the other hand, on account of their subservience, are treated with great concern and kindness; and their lord and master humbles himself in consideration of silk and honey to build for them Cocooneries and Bee Palaces.

Still his work of extermination is not done, and he falls, with yet more severity, if possible, upon the vegetables which withstand him. He cuts down a whole forest to the ground—old oaks, that have brooked the storms of a thousand years—cedars, which were mast-high before the birth of Christ, have no claim to longer existence in his eyes. Vines, shrubs, and plants are all rooted up and cast into the fire—not one left if he can help it—until, however desirable the ultimate object may be, one can hardly help thinking without some regret of such a complete destruction as this civilized man everywhere makes of a grand old world, which grew without care or culture under the very eye of God himself—

seeming to derive itself more directly from him than the things of man's production.

You will observe, too, that whenever the wild animals and plants of a country offer such resistance to the Farmer that he cannot conquer or subdue them, then, of course, Civilization makes no progress. Some of the most fertile spots upon the earth—in the tropical countries of Africa and South America—on account of the rapid and enormous growth of the wild plants, are still in the wilderness, tenanted by savages and wild beasts, bidding defiance to all efforts to dominate them. In such places, the day has not come for their reclamation; nor are the men of progress yet strong and numerous enough to undertake their conquest, in the face of the troubles and difficulties they present. They will remain for a time as the home of those races of men and animals, whose extinction is not yet right and proper, because unnecessary; but when the population of the world shall have increased and multiplied a hundred-fold by industry and the peaceful arts, then will all these domains be seized and appropriated in spite of all obstacles. The training of the African race to labor, under the direction and control of the white man as his master, now going on in the United States, may be ultimately such means, in the hands of the latter, as will enable him to triumph over the resistance of a tropical forest; and it is said that, even now, Southern Planters are turning their eyes toward the rich valley of the Amazon, in the hope that, with the help of negro labor, they may be able to establish themselves there with both success and profit. As it now is, the temperate zones are the theatres of man's greatest exertions; and it is there we will go on to consider him in the work of Improvement.

After having the "ground cleared," as the phrase is, a new and extraordinary feature again strikes us—one not before noticed in the world—namely, the undertaking on the part of the husbandman to say—and make it good—that, upon a certain acre, shall grow one kind of plant, upon another shall grow another kind, and so on, assuming to direct what shall grow and what shall not grow. Who ever dared to do this before?

In the long, long millions of years which attempt to measure the earth's existence, until yesterday there was no animal upon it who took such airs as this on itself; there was, no doubt, violence, struggle, and slaughter before—the strong preying upon the weak—but there was no attempt at systematic and universal destruction, such as we now witness; no attempt to substitute, for the generations thus destroyed, others in their places, favorites of the conquerors.

We have seen, however, that not only was the wild and spontaneous to be rooted out and destroyed, but that a new series was to be intro-

duced in their stead, under the control and direction of this new master of things, and this series includes *wheat, rye, oats, corn, apples, peaches, plums, &c.*

Where did they come from?

Because, perhaps, just about here lurks one of the most singular facts in natural history. And, to the question above asked, another may be added: When did he get the animals with which he proposes to stock the earth after he has exterminated the others?

Of all the domesticated plants, none seem to be older than man—none longer on the planet than he has been, if as long. There is no fossil man yet; nor is there any fossil apple, peach, pear, or plum, nor wheat, rye or corn. And the same is true of animals; no fossil horse, cow, sheep, or hog of existing species has been found, nor dog, nor cat, nor, indeed, "*any thing* which is his." He can have no permanent property in the races upon the earth older than himself; they will die first.

How strangely they submit to him—these domestics of his—and how strangely the others resist him, and refuse all his overtures. He may tame and pet an individual, but that is all; the race is beyond his reach. He cannot get it to breed or forget the liberty of its former wild nature. The grouse, hatched out by the hen, follows her about the cabin door only until it is able to take care of itself, and then it is away to the dark silent woods—wild, forever wild. On the other hand, the eggs of the wild turkey, incubated in the same way, bring forth a happy, contented brood, that, with little care and kindness, never leave their new master, but remain, multiplying, becoming his; they are reclaimed.

Why is this? People sometimes speculate upon domesticating certain wild animals—the deer, the zebra, &c.—but it cannot be done; and for the reason that it has not yet been done. The animals that will domesticate, do so without effort and without difficulty of any kind. No history informs us of any trouble whatever in getting in the ass, the horse, the hog, &c.; even in case of the turkey, which has been domesticated within the last 300 years, no one has kept any account of the process. It was as a matter of course, creating no surprise, requiring no attention.

Another thing somewhat remarkable, is the fact that, whereas animals, when wild, are of uniform color, yet, when domesticated, they become "ring-streaked and speckled" in every variety of color, and every form of maculation. Of these the turkey is an example—the wild one being always black, while we see the tame ones in the barn-yard, of almost all colors.

One more peculiarity in cultivated plants and domesticated animals is their very questionable ability to maintain themselves without the aid

of man, and this is not the least singular fact connected with the relation between them. How long would it be, for instance, before *wheat* would cease to exist if it were not cultivated? It is highly probable that in ten years not a grain of it would be found in the United States; and the same may be said of the rest—apples, peaches, &c., the same as grain. Then the wild and savage varieties would take ample revenge for their former expulsion by returning and overrunning their tame and helpless rivals. And it is more than likely the same fate would befall domesticated animals, if the protecting hand of man was totally withdrawn from them. True, the horse and ox might maintain themselves a long time, but it must be remembered that all animals, which are their natural enemies, would very much increase in such case. Turn them out now, and they do well in a quasi wild state, but there is no telling how much they still owe to man in that condition after all, seeing that he keeps down the numbers of lions, tigers, bears, &c., which might at last totally destroy and extinguish them.

I suppose that all these plants and animals have been derived from stocks originally wild with reclaimable natures; but that cultivation and domestication have developed them away from their original state so far as now, perhaps, to destroy all evidence of their identity with it, except in the case of the turkey. Whether they would be able to sustain themselves long enough, if now abandoned, to enable them to revert to their pristine condition, is very questionable—at least in the case of most of them, and not certain in the case of any.

In describing the changes wrought by man, I wish to be understood as distinctly referring them to civilized man, and I have a word to say further as to *his* treatment of other and uncivilized savage men. Is it not upon the same principle precisely as that which we have seen governing him in his relations with wild and savage beasts—putting them all on the same footing? And I do not stop to discuss the right or the wrong of this course; it is enough to know the fact, and that it always has been so, and is so at the present day. The conquest and settlement of this country is a forcible example of it; for on the landing of our people, they took possession of the soil, because they found it unmingled with any man's labor; there were no toil and sweat marks upon it, and their common sense told them it was open to their appropriation, and their conscience sanctioned the act. Then, as to the Indians—they invited them in the strongest terms—viz: by destroying all possibility of their old mode of life—to go to work and be subservient; if so, all would be well—if not, they must quit or be exterminated, as there cannot be any joint occupation of the soil by men who cultivate it, and by men who merely hunt and fish upon it. The first can only use it in the artificial state they induce upon it; while, to the second, it is only valuable

because of its natural wild state. In this case, however, the Indian chose to resist as well as he could, and a braver man never lived; but it did not avail, and the consequence has been to him the same precisely as to the bear, the wolf, or the panther. He has retreated from the face of the foe, to await a slower, but not less certain extinction, in the depths of the Western wilderness.

The Negro, on the other hand, is a domesticable wild man; he submits to servitude like the horse and ox—breeds as well, if not better, in slavery than in freedom; and the result is, that his race is preserved and is multiplying rapidly.

We observe the same law everywhere; the civilized man will have his own way, and he will oblige everybody and every thing else to conform to it. He dominates and subjugates them just in proportion to the distance between him and them, and graduates his authority over them to suit their position in the scale of development. The whole fabric of society is built of these gradations of slavery; nobody is perfectly free, but all are more or less subordinated, according to the above rule. Sometimes this amounts to but a slight deprivation of right—as here, under our Constitution, an alien born is not eligible to the Presidency of the United States; nor, indeed, can he enjoy the right of suffrage, except upon the performance of certain conditions. Sometimes the deprivation extends to all political and social rights, as in the case of our negro slaves, who are as completely chattelised as horses or oxen in all respects, except as to the *right to life*, it being a crime to murder them, while it is only a trespass to kill domestic animals.

Nor do I think this regulation is one of chance, but of law; every race, as such, being invariably found in the situation to which it is adapted with reference to the great end—Universal Civilization.

There is another thing to be observed here; and that is, that whenever men commenced agriculture, they not only conceived the notion of real property, but then, for the first time, was it that they devoted themselves to *labor*. Living before by hunting and fishing, which are both now considered rather as *sport* than work, or by the produce of their flocks, which they drove from place to place, after the fashion of nomadic tribes, they could have little or no idea of that continued toil and exertion which makes up so much of the world's capital in the shape of *labor*, and which is a position in civilized life most nearly approaching human happiness. In a natural state, man is characterized by an indisposition to work, and is only driven to it by necessity or force, as may be seen everywhere among savages; hence, *labor* becomes one of the characteristics of civilization.

From the foregoing premises, there would appear to follow these conclusions:

1st. All animals and plants exist in one or the other of two states, viz: either spontaneous and wild, or cultivated and reclaimed.

2d. The office of agriculture is to destroy and eradicate the former, and substitute instead the latter upon the earth.

3d. This undertaking gave to men their notion of real property, and turned their desires to fixed and permanent homes.

4th. In order to achieve this, necessitates a perfect domination of the whole, which is effected by labor, evolving itself at last as power in its highest sense.

5th. The end contemplated, to wit: The destruction of the wild, the servitude of the reclaimed, and the mastery of dominant races of men, serves us as a definition of the first and certainly most necessary form of human progress, viz: Agricultural civilization.

In order to attain this great result, all art and science combine, and by their means and skill, assist in every scheme and process involved in it; but it must be recollected they only *assist* it, for, after all, *human labor* is the great main spring, and that upon which agriculture depends more than any other branch of industry. Science may instruct the farmer, art may teach him, but, in addition, he must have a frame inured to toil, iron muscles that know no weariness, and, above all, a brain anxious, careful and exact, which constantly revolves the panorama of the farm before him, watching every part with ceaseless care and providence.

The sluggard and the idler have no success in this pursuit—less, perhaps, than in any other; seeing, as we have, that its products are the very offspring of continued care and labor; without these, the existence of such men is a partial relapse toward savage life. And right that it is so, seeing that industry is our closest approach to happiness. And were it not for the content and cheerfulness which, as a general rule, work brings with it, the toiling millions would be infinitely more miserable than they now are. Let an idle man be as wretched as he may, when he gets to work he will most likely soon find himself singing in unconscious oblivion of all his troubles. Let Art and Science, then, be grateful that there are toiling millions thus constituted to carry out and perform the great tasks which they impose, and let the millions seek, with reverence, the aid and assistance derived from them in the performance of their allotted work.

Now, as we have seen that this great work of civilizing the earth was first began by Agriculture, and as we know that by far the greater part of it will yet have to be achieved in that department, it is especially obligatory upon the Farmer to avail himself of all that the wisdom and skill of his fellows engaged in the work of conquest can offer for his assistance. More for his benefit, perhaps, than of any other class, have

the Sciences been so painfully and exactly eliminated, and the Arts so slowly and laboriously perfected. Looking to him for "food and raiment," or the material of the same, all other classes have ever felt the intimacy of their relations with him, and the extent of their obligations to him. All their labors and efforts may be said to converge upon, and for him, as well as themselves; and every invention of the mechanic—every adventure of the merchant, is made and undertaken with a view to work up his raw material, or carry it to its best market. Having the necessities of life in his own hand, they are willing, to a certain extent, to admit the superior nature of his vocation, in that he could, perhaps, contrive to live without them, while without him, they certainly could not.

And though I am free to admit that this so much desired joint concentration of science and skill has not yet made great progress in improving Agriculture—its ways and works, yet there is clear and decided evidence that the time is near at hand when it will do so; that the hosts are marshaling themselves, soon to be ready for the battle.

And here I cannot help but pause and ask you for your tribute of gratitude, justly due to the memory of a great and good man, lately deceased. I mean PROFESSOR JOHNSTON, of Durham, England—one who seemed gifted by Heaven to translate the language of the Laboratory into that of the Field, to carry the wisdom of the pale Chemist as a gift to the ruddy Farmer, and to show the hidden secrets of Nature's handicraft to those who might have seen but were unable to comprehend them. This man, by his own almost unassisted labors, has spoken to the millions of both hemispheres so as to be understood; he has diffused his spirit among them; his books are on every shelf in rural districts everywhere, and the corn grows the better for it, and there is more bread.

Let him rest in peace; he has performed a task far more worthy of a monument than he who defended, in this age, against the most terrible siege the world has ever seen, or than they who have beaten down and demolished the great fortress of the Black Sea.

This man's life seems to me an era, and his works a great achievement. He has bridged the gulf between the peasant and the man of science; he has taught them to commune together, and the myriad eyes and hands of the agricultural population are at last on the point of engaging in a career of intelligent observation and experiment, which cannot fail to produce a result as wonderful as the means to be used are simple.

Now, having set boundaries to the function and office of the Farmer, and fixed the relations existing between him and the rest of the animate creation, we have thus evolved the formula expressive of his calling and occupation—namely, the *destruction* of the wild and savage, and the *cultivation* and *protection* of the tame and reclaimable.

To the first, it is necessary, for a moment, to give our attention, in

order to determine whether there is such a thing as an intelligent exercise of this power of extermination, and whether Science furnishes any aid in this work. One or two examples will suffice to illustrate. Take, for instance, the Bot in horses. Now, every farmer, of course, would be desirous of remedying this evil—one of great annoyance oftentimes—and a point would be gained if the mischief could be prevented. The Naturalist, however, in the course of his entomological studies, finding a Bot in the stomach of the horse, undertakes, by way of experiment, to develop it and see what it will come to, when it turns out to be the *Horse Bee*, after undergoing its last change!

Here, then, is a scientific fact proved by experiment, and leading to very simple conclusions—as the Bee and Bot are identified, the egg laid by the Bee is, of course, at the same time shown to be the origin of both. This egg is seen by all in the shape of little yellow nits, stuck by the Bee upon the horse; and it is easy to scratch them off, and thus prevent them from getting into the animal's stomach, which they effect by causing an itch which the horse bites, thus carrying them down his throat to their proper nidus. How simple, then, is all this! The man of science shows the nit or egg, the farmer destroys it, and there need be no more Bots in horses.

Again: The Cut-worm destroys the corn to such an extent, sometimes, that fields have to be replanted again and again. Somebody (of course, so far a man of science) discovered that this Cut-worm was nothing more or less than the larva of the May Bug; that it lived in the earth about plough-deep for three or four years before it took to itself wings, and that during that period it was especially mischievous. The next thing which suggested itself was, whether this pest could not be disturbed in its winter-quarters by late ploughing, and thus expose it to the frost? The experiment was tried, and the result was successful. A field ploughed early in the winter is said to be freed from the Cut-worm, and the corn of the next year escapes from injury.

Hence, we see that the function of science is to assist the farmer even as a Destroyer. The Entomologist watches with care and perseverance the ways of insects, the manner by which they propagate, the food they most delight in, and he traces their habits in all the stages of their metamorphoses. He marks their times and seasons, points them out when in a helpless condition, shows when a blow aimed at them will be most destructive. In short, he is a spy in their camp for the purpose of giving their great enemy, the Farmer, all the information necessary to defeat them. He also discovers more—that some of these insects are not only not injurious, but even useful, from the fact that they are the most terrible enemies of others which are hurtful, killing large numbers of them.

How important, then, that the Agriculturalist should not suffer all this labor and learning to be lost, but that he should encourage and practice the lessons it teaches him; and some day all the pests that now scourge him, and often ravage a whole crop for him, will be as easily provided against as to keep the hogs out of his fields. Then he may expect to defend himself against the Hessian Fly, the Wire-worm, the Grasshoppers, and the whole tribe of little mischievous myriads now at his defiance, or nearly so.

In order to understand the harmony which is beginning to exist between these two pursuits, I need only refer to the "Patent Office Report for 1854," a portion of which is devoted to this very subject, showing what the spirit of our Government is in regard to it, and how much our Rulers think they can benefit the Farmer by sending off a learned man upon the apparently childish errand to see how the Cotton Louse, Boll Worm, Grain Moth, Weevils, Borers, &c., live, and move, and have their being. But the mission of such a man may do more to civilize the world, perhaps, than that of many a devout enthusiast, who, like the Hero and Saint, Xavier, would run to the uttermost ends of the earth to teach savages a new religion, when half the folks he left at home needed his teaching as much as the poor heathen. Nor is he behind any who truthfully and humbly helps to make the light of Science shine about the head of the laborer—who comes with his magic words to solve the darkest mysteries, and at last to make even the coarsest boor rational in the contemplation of the wonders of Nature.

Although there might have been a time, and there may be now places in particular seasons, in which a large scientific acquaintance with the insect tribes would be of the first importance to the cultivator of the soil, yet in this country, fortunately, they are not so dangerous to any crop as to make us tremble for the fate of the people dependent upon the earth for food. Still they do great harm, and great credit is due to those who, in this unostentatious walk of science, enable us to prevent or control their ravages.

The Naturalist, however, leaves no field unexplored; and while he teaches new methods of destroying the noxious, is also busy to enlarge the area of useful Production, by studying the economy of plants—their growth and cultivation. As a Botanist, he has watched their little germs from the first moment of their quickening, under the influence of the sun's rays, up until the time when they have put on the "sear and yellow leaf" of old age. He has discovered a wonderful analogy between them and animals; that their blood circulates; that they eat, drink, breathe and sleep; that they are male and female, producing by generation; and, finally, that some of them respond to the hand of cultivation, so that, in time, they almost change their natures. He has suggested that

the coarse grass *Egilops* is the probable ancestor of our Wheat; that the bitter Crab has been improved into the luscious Apple; and that from a dingy, useless root of Chili, human effort, despite the Church, has produced the Potato—that especial food of the poor in all christian countries. He has multiplied the petals of the Rose, Pink and Dahlia, and crossed the breed of his Tulips, and streaked them as, of old, Jacob did the cattle of Laban. He has shown how it is that, by clipping, pruning and training, trees and vines may be taught to assume almost any desired form and direction, and to concentrate their whole power upon their fruits, instead of wasting it on useless ramification and idle foliage. He has found out the secret of stall-feeding Cucumbers and Melons, of fattening Beans and Peas, and he has persuaded us of the manner by which Cabbages grow in the head, and how the Turnip (a member of the same family) develops itself at the root. There is hardly a trick, turn or device in the economy of the whole vegetable kingdom, however ingenious, that he is not now endeavoring to make himself the master of, for the benefit and profit of the Farmer, and to try to complete the dominion of civilized man over all.

And away in some dingy laboratory, with the stench of Tartarus, enveloped in all kinds of smokes and vapors, and surrounded by acids and alkalies, metals and minerals, and among pots and crucibles, stands his friend and brother, the Chemist, reducing all substances to their ultimates, and determined to be at the bottom of things. He tears apart an organism as a banker does a roll of money, telling its value in Oxygen by eights, its Carbon by sixes, and its Hydrogen by units, &c., as nicely as if he had seen it made. He weighs its nutriment, and measures its ashes; tells whether it is worth cultivating or not, and discovers the most valuable species. To him, form, combination, or organization, are as nothing; they never deceive him. He strips them off like clothes, and delights to see the elements only when naked. He is the true magician, for whom the world has been so long curiously looking—a genuine enchanter—not a horrid witch, muttering on a blasted heath at midnight over an impotent hell-broth, whose charm would not have silenced the baying of a watch-dog, unless its filth had choked him. But a man of the highest reason—believing in God, not in the Devil—having faith, continued faith, in the uniform laws of the universe. He has no mystery to hide from you; wants to teach you all he knows if he can, and knocks your ignorant curiosity about your ears just after he has kindled a fire under the water, or kindled one that burnt the steel blade out of your knife, but would not touch its charcoal handle, or, after he had lighted his lamp with an icicle, by stopping, in order to show you that, instead of its being strange that such things were, it would be far more strange if they were not. What great things

he has for the consolation of the Farmer ! Telling him not to be afraid ; that he will at last have hauled his soil wholly into the barn, and sent it off to foreign lands to be eaten ; telling him of a great ocean of manure forty-five miles deep, wrapped all about the earth like a fluid mantle, in which floats the great bulk of the food upon which the crops feed ; telling him of this everlasting supply of Oxygen, Carbon, and Hydrogen, that is worth a whole solar system of guano and plaster of Paris to make things grow, and finally shows him how small a portion of the Wheat he had reaped really came out of the earth—how he could carry back in a three-bushel bag the ashes of one hundred dozen of it to the field from whence he had taken it and the field next year would be as rich as ever ; that, after his crop is thoroughly dried, and all its gaseous and volatile elements driven off by heat or fire, there is very little left, and that the exhaustion suffered by the soil in losing it can be remedied at a very small cost by a little care and labor well bestowed.

His next lesson is upon the soil itself, showing how its great function is to hold the plant firm and steady in its place, keep it of the proper temperature, and supply it with such liquids and solids as are proper to enter into its composition ; that this soil consists of divers ingredients, mingled and blended together in such proportions, in rich lands, as to produce a large yield of almost any kind of crop for a season or two, but that, as every particular kind of plant requires more of that ingredient entering most largely into its texture, it is proper to rotate the crops, in various ways, for fear of a total exhaustion of that substance most in demand if the same crop was planted for many years in succession ; that, in some cases, in unproductive soils, when a single ingredient was wanting, the addition of it operated to fertilize them, of which lime is a familiar example. He also shows what food this plant most delights in, and what that one, and from what sources it is most readily supplied if wanting. And, further, that there is a necessity that the surface should be well broken up and loosened, so that all the various substances composing it may have liberty among themselves, if we would have a successful result ; that the sun, rain and air must also have a chance to play their part in this marvellous economy—the light and heat, to quicken the elements into activity, chiding them to seek their affinities—the water, to solve their cohesion and unbend them for the work, while the air comes on its light wing to carry them upwards to the mouths of the plant, millions of which gape in every leaf to drink in the subtile supply.

And especially does he dwell upon OXYGEN, Nature's Ariel, as the active spirit in the universe. How he arouses himself at the first shimmer of the sun's rays as they light on the mountain tops, and begins his day's career of gallantry, dallying in fierce amour with all the elements, mingling himself here and there, and everywhere a universal favorite.

In union with Hydrogen, he forms the water we drink—in mixture with Nitrogen, he makes the air we breathe; and to him, perhaps, we owe ninety-nine hundredths of all the heat which tempers the earth to our comfort. Perhaps, too, from the same agent comes the light—many-tinted—revealing to us a world of beauty. Certain it is, that, in his union with combustible substances, heat is invariably produced as an effect—whether the combustion be sensible as in fire, or insensible as of blood in the lungs, or of iron in its rusting. It is also equally certain that, whenever this combustion is active and violent, as in fire and flame, all objects within a certain range of it are *lighted* up in all colors. If we consider him still more closely, he seems to be the tireless and vigilant purveyor of the whole vegetable kingdom, and the medium of its food and sustenance. See him take up from the dark earth his comely though black sweetheart, Carbon, whom he burns in his arms as Jupiter did Semele, before he carries her invisible up to the tops of the highest trees, to feed those mute objects of his care. Even down into the lungs of all animals does he go upon this errand, flying out on the breath laden with the food of plants; nay, even rising out of the flames of a fiery furnace, he performs the same mission of love. Never idle, he heaves the ocean in its incessant roar, and rides gaily among the winds in the wildest storm. The enemy of all inertia, he devours every thing that is not in use, gnawing inglorious swords in their scabbards, and eating into the ploughshare as it rests in the furrow, or the engine that is silent in the mill. Nothing stops him—hardly anything that he does not manage to change into some new form. A Proteus himself, he may be found assuming all forms in combination, as well as without form in a diffused state. Personify him, and all the gods of ancient mythology will not furnish analogies enough to compare with him. His exploits are far more wonderful than all of them put together; and the miracles wrought by a whole calendar of fabled Saints, are not a thousandth part as extraordinary as those he is working daily in and around us throughout the whole domain of nature.

Nor is he the only one of the mysterious agents worthy of mention which the Chemist has introduced to us; and there are some things, perhaps, quite as wonderful in the multifarious uses which this same Carbon serves in the economy of nature—glittering upon the brow of beauty, when chrystalized in the diamond, and set in the crowns of Kings as their highest and most costly ornament, dug out of the earth as coal by the sooty miners, and moving as fuel that steam machinery which is employed in a world of manufactures, and in driving the great ships of commerce to and fro across the widest oceans, regardless of wind or tide.

Besides this, we have seen that it is the staple food of vegetables, and thence, of course, of animals, entering more abundantly into their com-

position than any other element, that part of it in the blood being burnt as fuel in the lungs just as coals are burned in a stove, thus generating power in the animal engine. We have also seen, in its chemical union with Oxygen, that it is one of the great sources of heat on the earth, this union being excited and brought about by the presence of the sun, friction, &c. Of it is built up the tall cedar, the stout oak, as well as the humble leek and the tender delicate blades of grass. It is in the green of the leaf, and in the glow of the flower—in the brown of the berry, and the blush of the apple. Everywhere, in all the varied forms of living beauty, is this simple, common, every-day element to be found playing a most important part. Another consolation we have is, that every bushel of coal—every perch of limestone or cord of wood that is burned, liberates Carbon and contributes its share towards enriching the soil and atmosphere with this constituent principle of the food of vegetables.

But it is not only men of science who are laboring for the advantage of the farmer, and striving to lighten his toil; the mechanic and engineer are also at work. The former improves his ploughs and other implements, inventing for him lately many ingenious contrivances to do his work more easily and better than heretofore, such as cultivators, drills, threshers, reapers, mowers, &c., all of which promise much for his future progress.

The Engineer, too, is leveling the hills and mountains, and constructing for him Railroads, by which he is, as it were by magic, lifted, farm and all, and set down in close proximity to the great markets of the country, so that now a Westmoreland County farmer is really as near to Philadelphia as his neighbor of Bucks County was twenty years ago, and thus, to a great extent, put on the same footing with those who formerly enjoyed the advantage of a more favored locality.

There is the Printer, too, besides embodying in Books information important to him on all subjects, keeps peppering him week after week with hot shot through the newspaper, two or three columns of which are generally devoted to that purpose, so that, if a good thing is found out in any part of the country, it is immediately sent off in all directions by post, until every man who hath eyes to see and ears to hear must be stupid, indeed, if he cannot avail himself of it within a few days after it is made public.

Along with the means to which I have just alluded, must be added your own, and similar associations, called "*Agricultural Societies*," which are well calculated to stimulate those engaged in them to make efforts to excel. Many a man thus moved, will discover within himself latent powers and hidden forces, the development of which leads him to success and fortune, and which, without the encouragement you offer him, had perhaps remained undiscovered by him for a lifetime.

Your Society, by frequently congregating its members together for a common purpose, will instruct them by the increased means of information it affords—will arouse them by the emulation it excites, and reward the more successful by the distinction it confers. Small results may greet you at first, but as the years go by benefits will be multiplied in a continually increasing ratio, until, at length, you may be the means of changing the whole face of the country, and, to some extent, even its population, for the better, and you will have your reward—*the earth will yield more bread.*

It would be also well that you remember, since you are entrusted by Heaven with the great duty of adapting the whole domain of animal and vegetable life to a new and much higher phase of existence than heretofore, that you ought to qualify yourselves for the task, so that, when you come to render an account of your trust to the great Master of things, you may not be chargeable with negligence, or found in arrear with your reckoning. It must surely be a great mission, when it requires you, with one hand, to wield the sword of the Destroying Angel against so many living beings—God's creatures like yourselves; but it assumes a still higher form, when, with the other, you are to kindle the sacred fire of Prometheus, and animate a world of industry and peace, rising by your exertions over the ruins of the old.

The industry and polish of Ceres will expel the uncouth Pan, with his rude and idle satyrs, and the harvest hymn of universal culture be heard everywhere resounding instead of the battle song of contending savages. To such a consummation, all is slowly, yet surely, tending; and he who feels himself unable to sympathize with this onward movement, may set himself down as doomed to that destruction which, of necessity, awaits all that which yet savors of the *natural and wild.*

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